United States Patent [19]

Gasser

[11] **4,067,480**

[45] * **Jan. 10, 1978**

[54] **PROCESS FOR DISPENSING PRESSURIZED FLUENT MATERIAL**

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[73] Assignee: **Colgate-Palmolive Company**, New York, N.Y.

[*] Notice: The portion of the term of this patent subsequent to Mar. 27, 1990, has been disclaimed.

[21] Appl. No.: **626,949**

[22] Filed: **Oct. 29, 1975**

Related U.S. Application Data

[60] Division of Ser. No. 233,797, March 10, 1972, Pat. No. 3,990,612, which is a continuation of Ser. No. 769,470, Oct. 9, 1968, abandoned, which is a continuation of Ser. No. 477,655, July 29, 1965, abandoned, which is a continuation of Ser. No. 164,703, Jan. 8, 1962, abandoned.

[51] **Int. Cl.**[2] **B67D 5/62**

[52] **U.S. Cl.** ..... **222/146 HA**

[58] **Field of Search** ..... 222/146 HE, 402.2, 190, 222/146 HA; 219/301, 302, 214

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Attorney, Agent, or Firm—Herbert S. Sylvester; Murray M. Grill; Norman Blumenkopf

[57] **ABSTRACT**

A process which comprises

a. withdrawing into a chamber a portion of expandable fluent material from a container containing a body of such material under pressure, while maintaining the withdrawn portion in said chamber under pressure and in substantially unexpanded state;

b. modifying the temperature of said withdrawn portion in said chamber while maintaining it under pressure and in substantially unexpanded state; and

c. discharging said material from said chamber in an expanded state, and a device for carrying out such process. Step (b) preferably employs electrical heating.

10 Claims, 9 Drawing Figures

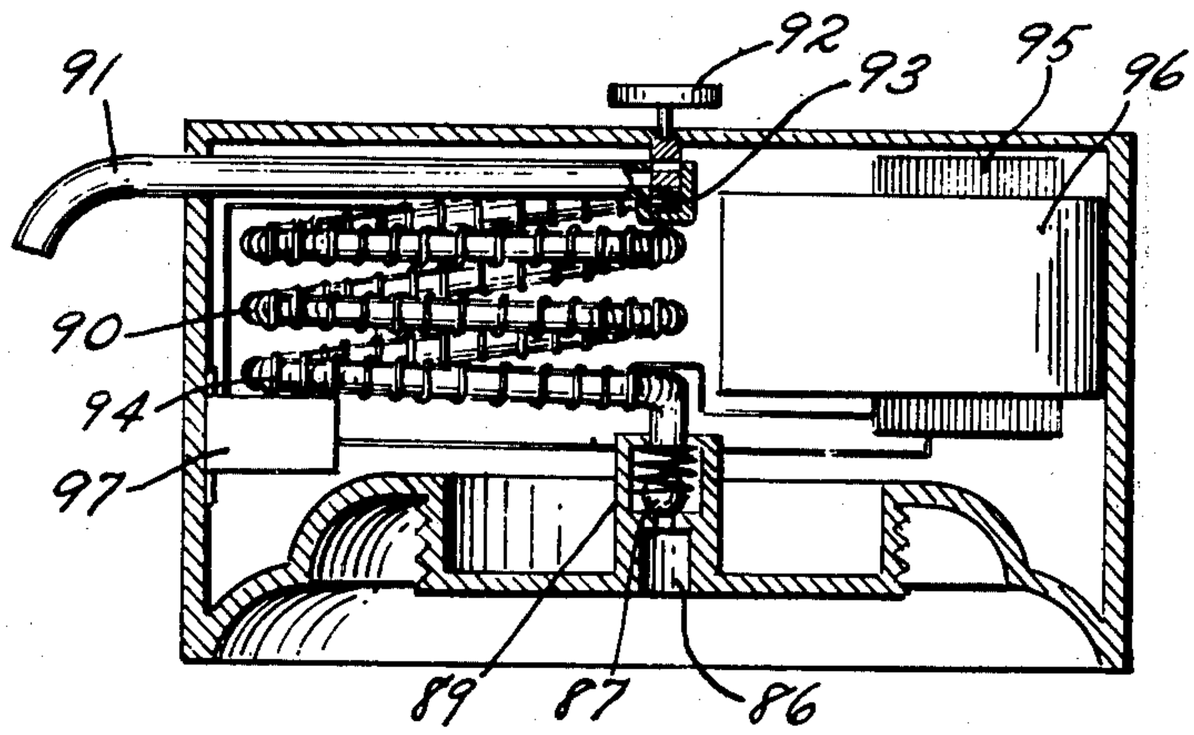


Fig. 1

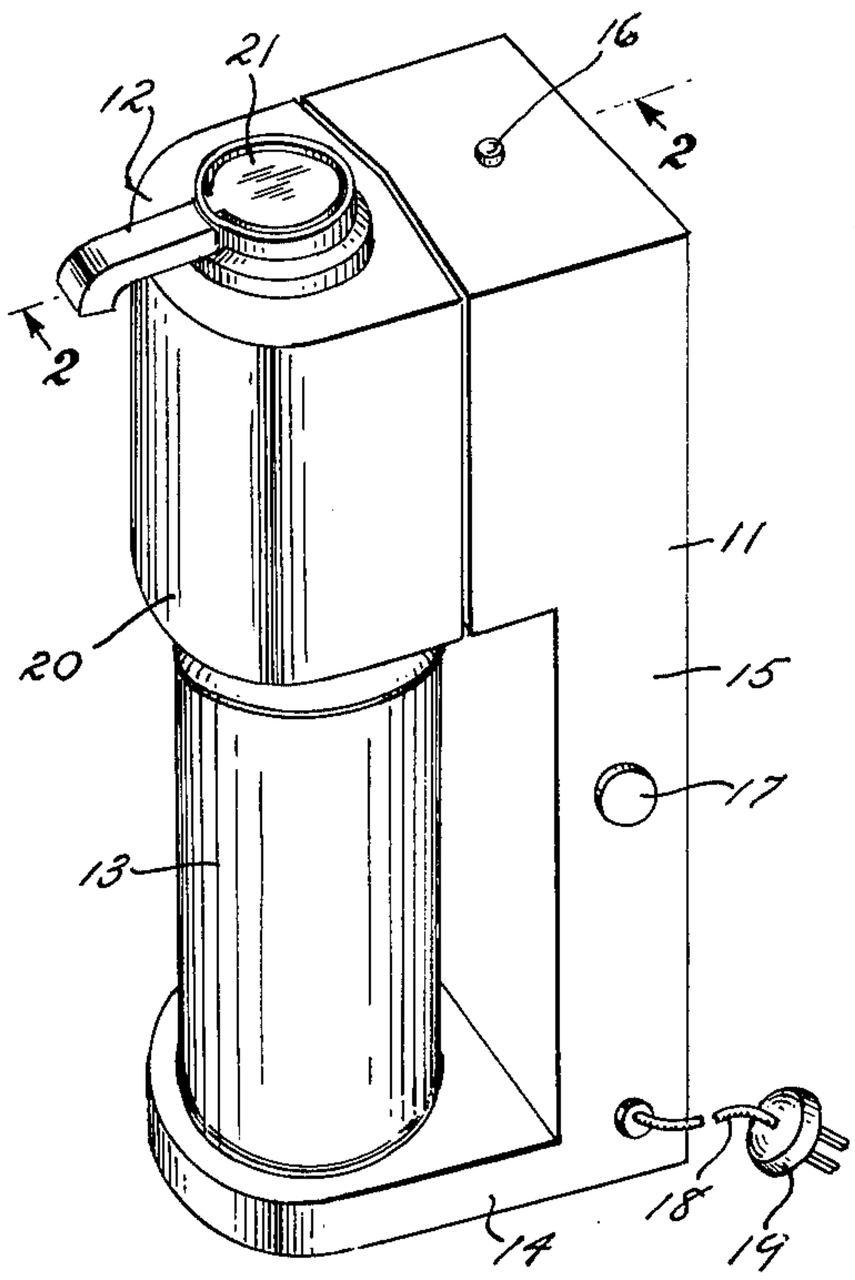


Fig. 3

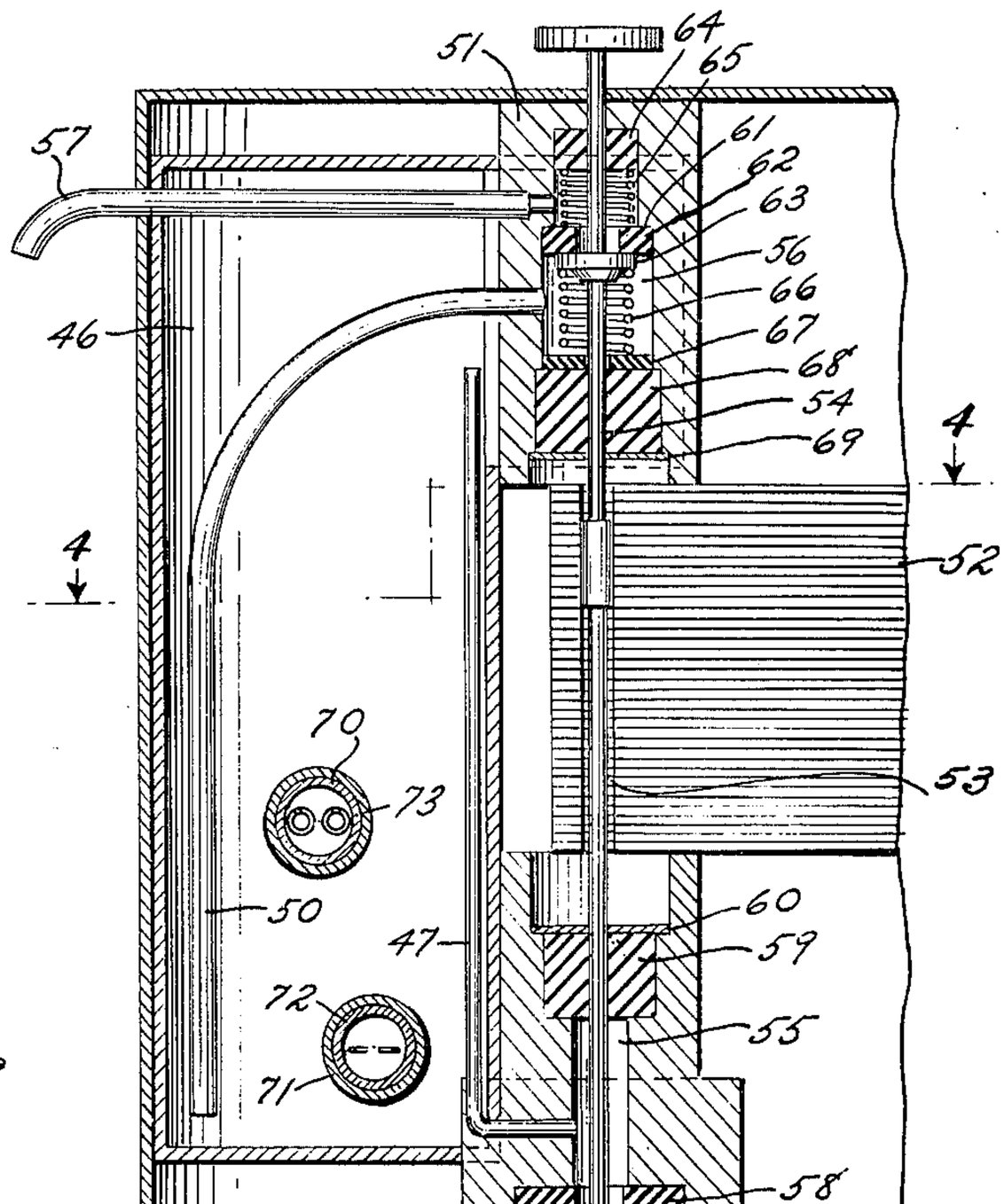
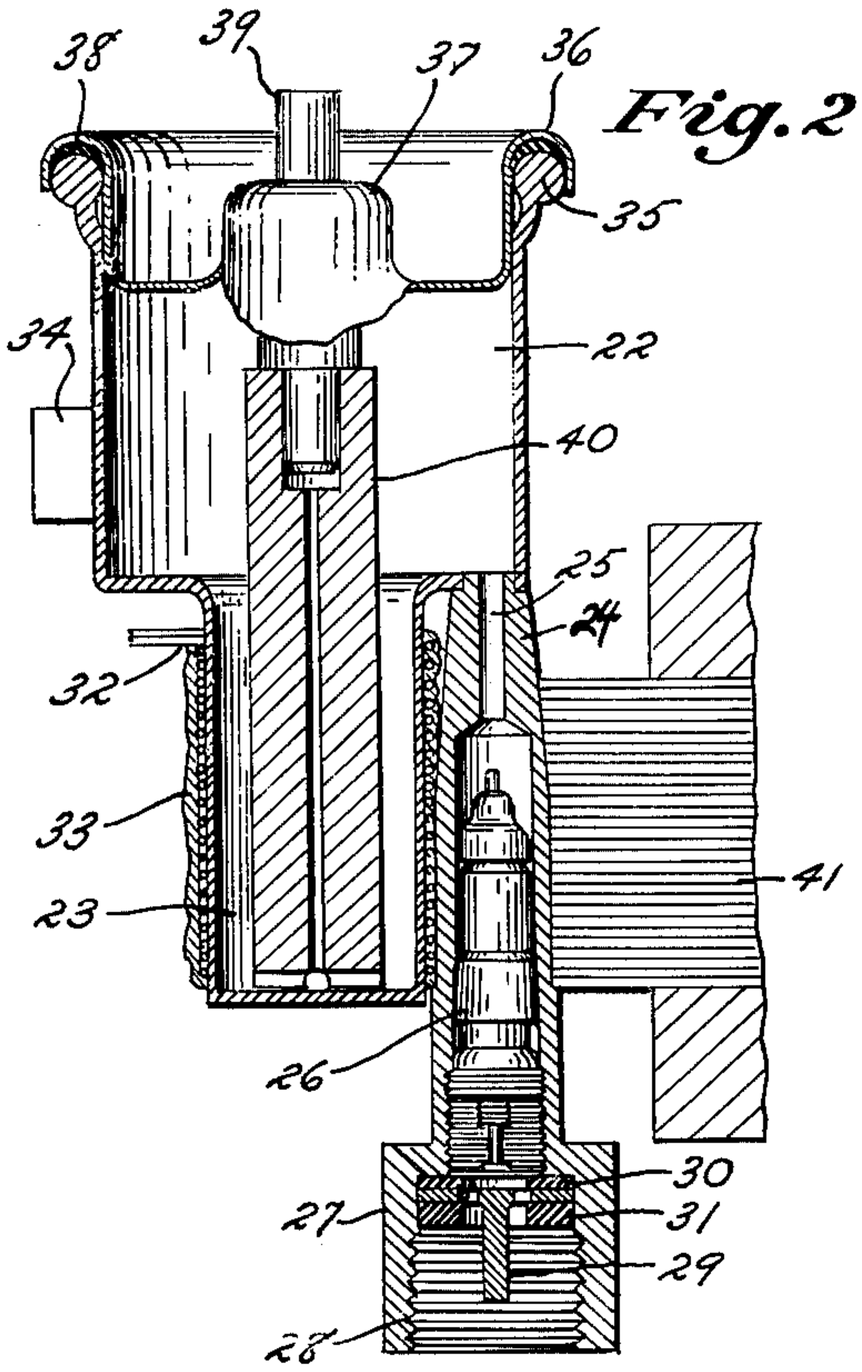


Fig. 2



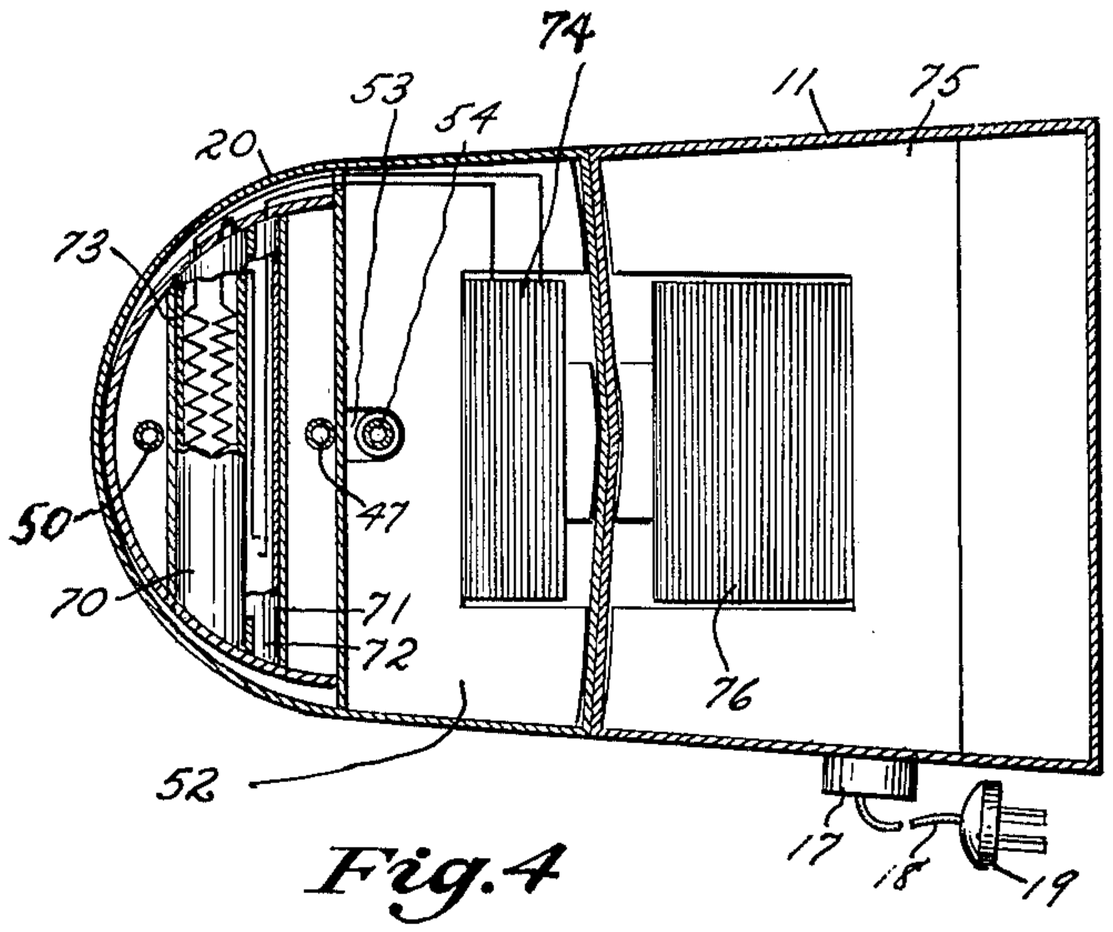


Fig. 4

Fig. 6

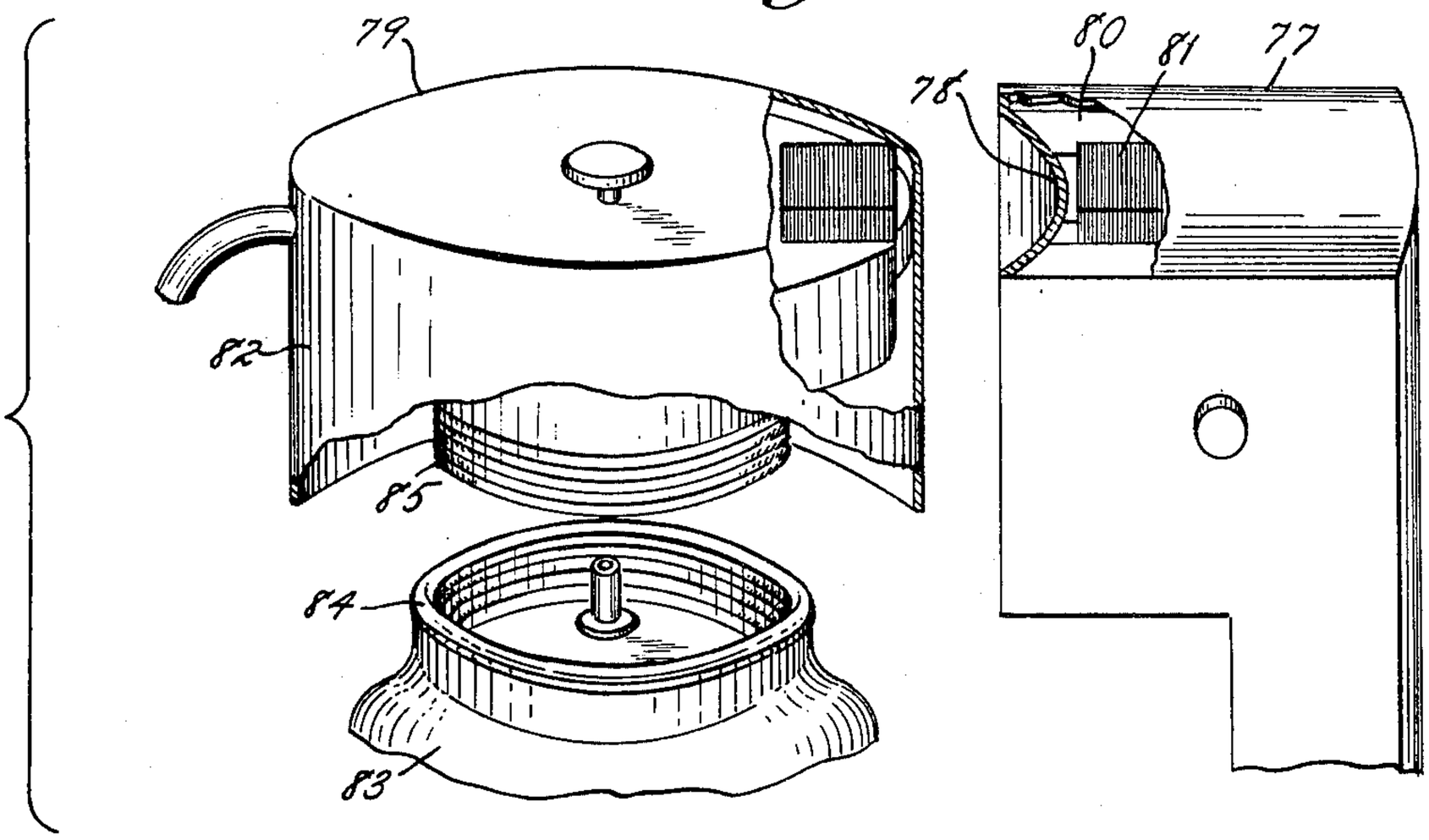


Fig. 7

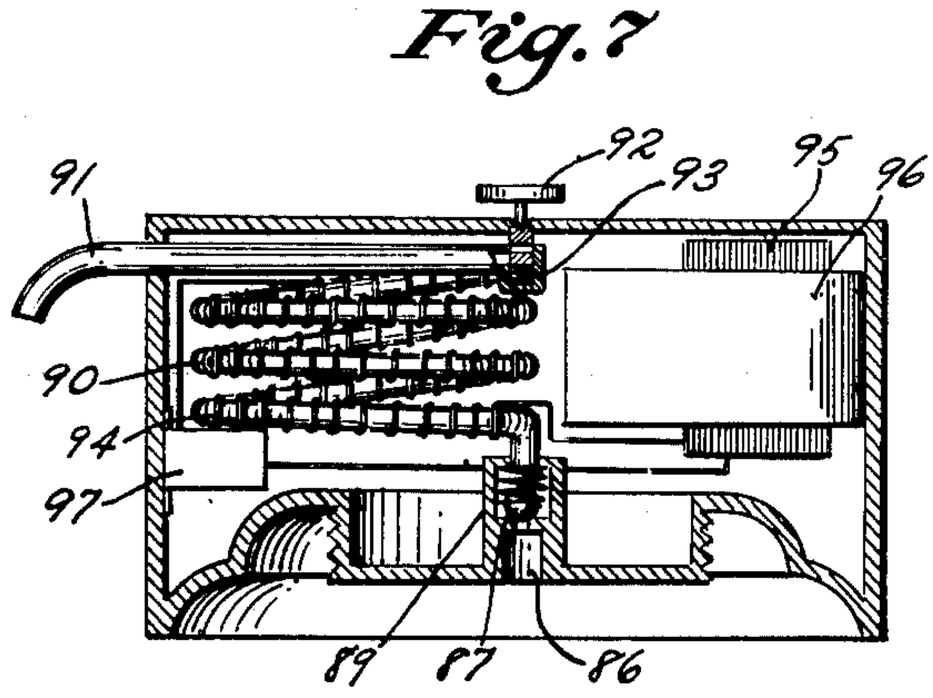
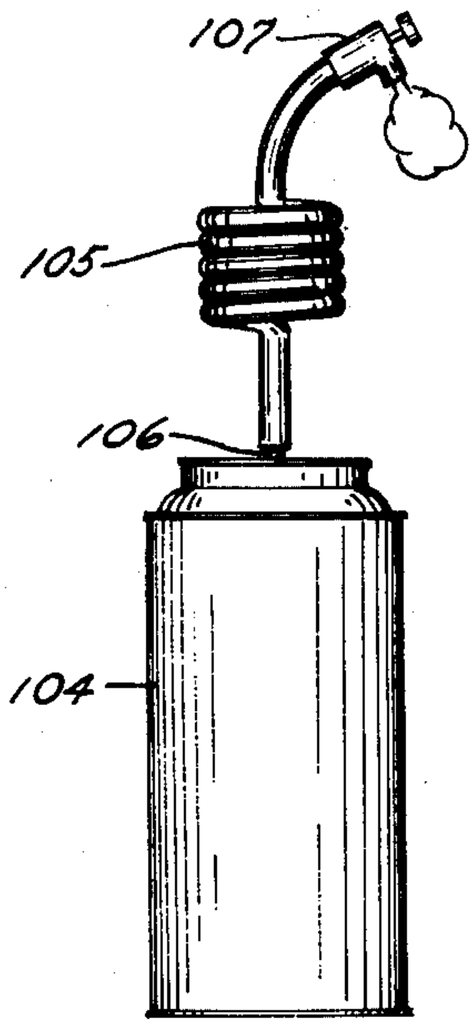


Fig. 9



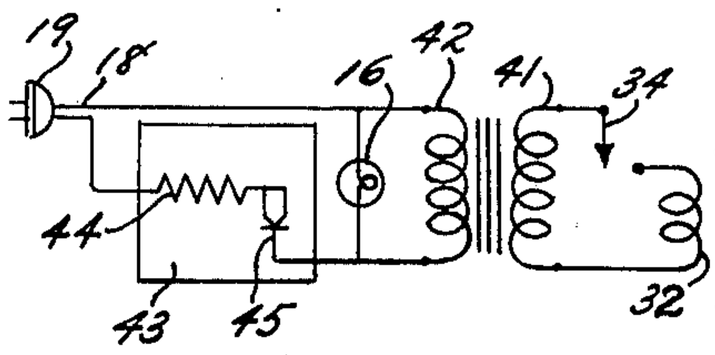


Fig. 5

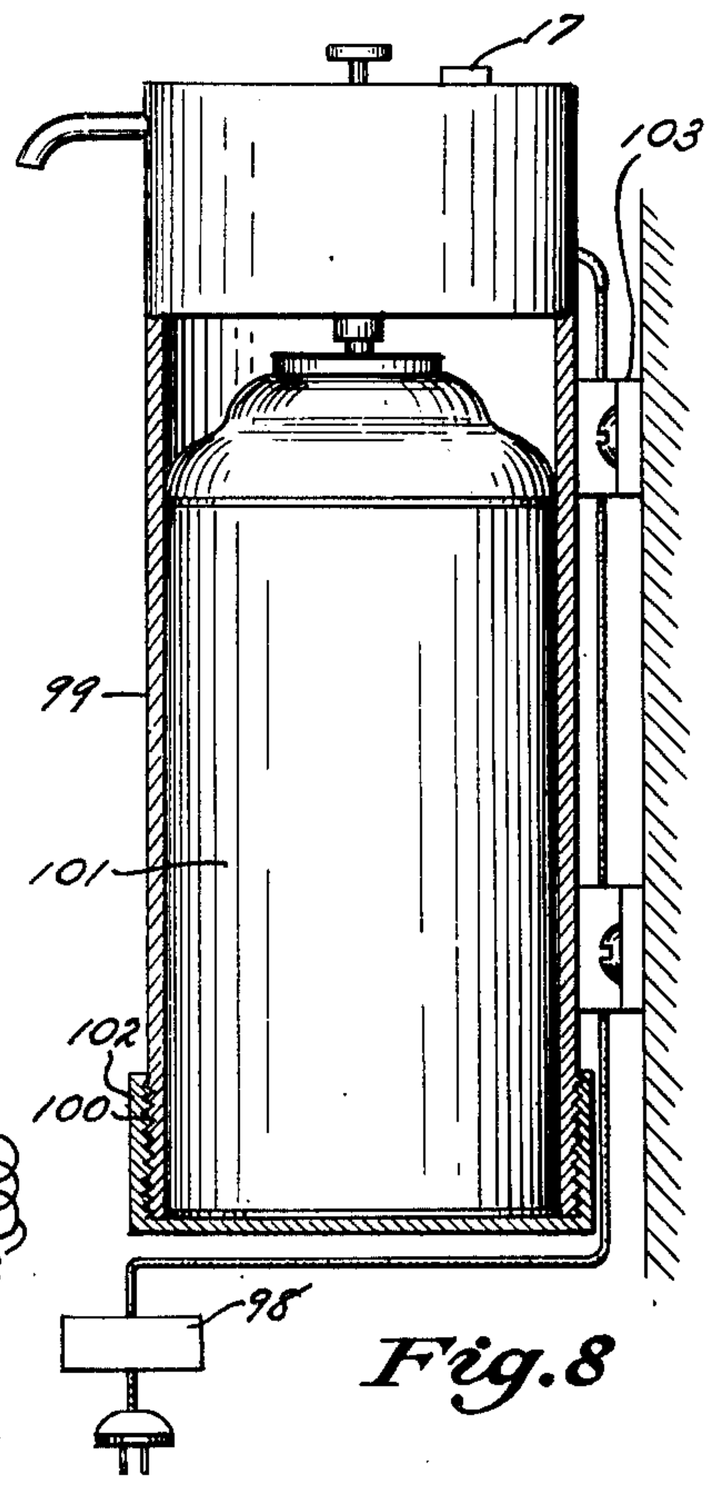


Fig. 8

PROCESS FOR DISPENSING PRESSURIZED FLUENT MATERIAL

This is a divisional of application Ser. No. 233,797 filed Mar. 10, 1972, and now U.S. Pat. No. 3,990,612, which was a continuation of Ser. No. 769,470, filed Oct. 9, 1968, now abandoned, which was in turn a continuation of Ser. No. 477,655 filed July 29, 1965, now abandoned, which was in turn a continuation of Ser. No. 164,703 filed Jan. 8, 1962, now abandoned.

This invention relates to a device and process for dispensing fluent material. More particularly, the invention relates to a device and process for dispensing a fluid material at a modified temperature in an expanded state.

The use of pressurized dispensing containers for a large variety of products has become popular in a number of fields, including cosmetics. For example, various types of creams, shaving lathers, emollients and other types of cosmetic preparations have met with consumer acceptance in the form of aerosol packages. With many of these products, it is sometimes desirable to dispense the material at a modified temperature.

The present invention provides a device and process to achieve this result. The device and process disclosed and claimed herein, although readily adaptable to a wide variety of applications, are particularly useful in the field of dispensable pressurized "aerosol" compositions and especially for the dispensing of heated shaving lather. In the interest of simplicity, the invention will be described in its application to the provision of heated shaving lather. However, it is to be understood that the present invention can be employed with other products, too, as will be apparent from the following description, taken in conjunction with the accompanying drawings, in which:

FIG. **1** is an isometric view in elevation of a dispensing device for producing heated shaving lather in accordance with this invention;

FIG. **2** is a partial sectional view in elevation taken across line **2—2** of FIG. **1** and shows the detailed construction of a preferred form of chamber and related elements of a warming head, with the casing removed;

FIG. **3** is a partial sectional view in elevation of another embodiment of the chamber and related elements;

FIG. **4** is a sectional plan taken across line **4—4** of FIG. **3**, illustrating the relationship of primary and secondary inductors and the position of the heating element and a thermostat in the embodiment of the chamber showing in FIG. **3**;

FIG. **5** is a schematic diagram of the electrical circuit of the device of this invention;

FIG. **6** is a partial sectional isometric view in elevation of another embodiment of the device in position for assembly onto a dispensing container, illustrating the primary and secondary inductors and means for attaching a container of pressurized dispensable shaving cream to the warming head;

FIG. **7** is a partial sectional isometric view in elevation of the warming head shown in FIG. **6**;

FIG. **8** is a partial sectional view in elevation of another embodiment of the device showing the container of pressurized shaving cream completely enclosed within a casing; and

FIG. **9** is a view in elevation of a simplified embodiment of a device for dispensing shaving lather at a modified temperature.

In accordance with the invention, a device for dispensing a fluent material, such as liquid shaving cream, at a modified temperature, from a pressurized source which contains the fluent material and a propellant, comprises means for withdrawing, separating or isolating a portion of pressurized fluent material from the source, and for modifying the temperature of the separated portion while holding it under pressure and means for dispensing the separated portion at reduced pressure in an expanded state after temperature modification thereof. Most advantageously, the separated portion of fluent material is held under pressure sufficient to retain it in a substantially unexpanded state. The invention also includes a process which comprises withdrawing a portion of fluent material from a pressurized source, modifying the temperature of the separated fluent material while it is held under pressure in a temperature modification zone, preferably while the fluent material is held under sufficient pressure to retain it in a substantially unexpanded state, and dispensing the separated fluent material at reduced pressure in an expanded state after the temperature thereof has been modified.

The propellant used in the pressurized dispensing container can vary widely. Any propellant material generally employed in pressurized dispensing containers is suitable in the practice of the present invention, although the liquefied gases are preferable. Among these are the poly-halogenated lower hydrocarbons, like chlorinated and fluorinated methanes and ethanes, and the lower hydrocarbons, such as propane, butane and isobutane and related compounds. Compressed gases such as nitrogen, oxygen, nitrous oxide and carbon dioxide may also find use.

Referring to FIG. **1**, a device suitable for dispensing heated shaving lather in accordance with the invention comprises a support member designated generally by numeral **11** and a warming head **12** adapted to be attached to a pressurized dispensing container **13** full of liquid shaving cream and a propellant. The support member has a base **14** which can be removable, if desirable and an enlarged upright back **15**. The support member can be fabricated from a wide variety of materials such as metals, plastics, ceramic materials and the like, but is preferably plastic, and has a removable back panel, not shown, to permit access to the interior thereof. Disposed within the upright back **15** is the primary inductor circuit more specifically discussed hereinbelow. An indicator light **16** and an actuator button **17** to close the primary inductor circuit are located on the support member as illustrated. An electric lead cord **18** equipped with a plug **19** is connected to the primary inductor circuit located therein. The support member is adapted to receive the warming head **12** and container **13**, as illustrated, and the upper part of the support member is adapted or shaped so that the warming head will rest in close association therewith.

The warming head **12** can vary widely in construction and in the preferred forms of the device contains the major essential elements of the invention, that is, means for separating a portion of liquid shaving cream from the pressurized container, means for maintaining the separated portion in a substantially unexpanded state and for modifying the temperature thereof and means for dispensing the heated separated portion in an expanded state in the form of a lather, as well as related elements. As shown in FIG. **1**, the warming head has an outer casing **20** which can be made from the same material as the support member **11** or a different material. A

suitable outlet valve and actuator designated generally by numeral **21** are disposed on the warming head and communicate with the interior of the warming head as explained more clearly.

In FIG. **2**, there is shown a preferred embodiment of the essential elements located within the warming head. The means for maintaining a portion of liquid shaving cream from the container in substantially unexpanded state and modifying the temperature of the separated portion comprises a chamber **22**, which has a more restricted lower section **23**. The chamber is made of a metal such as aluminum, which has good heat transfer properties and transmits heat to liquid shaving cream contained therein. The larger upper section of the chamber has an opening therein into which the means for separating a portion of liquid shaving cream, a tube **24**, is press-fitted in pressure tight relationship and soldered or brazed at the juncture between the tube and chamber to insure against leakage. The passageway through the tube is somewhat restricted, as shown at **25**, at that end where it is inserted into the opening in the chamber. This gives added strength at the joint. However, the remaining length of the tube has a greater internal diameter and is fitted with a suitable check valve **26** which opens to permit liquid shaving cream to flow into the upper part of the chamber in response to pressure changes in the system as set forth more fully hereinbelow. At the end opposite its juncture with the chamber, tube **24** is equipped with a fitting **27** which is internally threaded at **28** and mates with threads (not shown) on the outlet or discharge valve of container **13**. A flanged actuating pin **29** is disposed within fitting **27** and extends downwardly along its central axis. To insure a leakproof fit to container **13**, gaskets **30** and **31** are located within the fitting on the upper and lower side of the pin flange. When fitting **27** is threaded onto container **13**, pin **29** extends down to an outlet or discharge valve of the container and holds the container valve permanently down, in open position. An insulated nichrome wire resistance heating element **32** is wrapped around the lower restricted section **23** of the chamber and is coated with an epoxy resin **33** or other similar material. The resistance heating element **32** is connected to the winding of a secondary inductor. Connected in series with the resistance heating element is a thermostat **34** attached to the side of the chamber **22** in any convenient manner, such as with epoxy cement or similar material. The upper large section of chamber **22** is provided with a rim **35** around which the valve cup **36** of a suitable dispensing valve **37** is crimped in place along with a sealing gasket **38** to insure a leakproof fit. The means for dispensing the separated heated shaving cream to the atmosphere as expanded lather includes hollow valve stem **39** which extends up through an opening in the casing and to which the valve actuator **21** is press-fitted. A dip tube **40** of polyethylene, polystyrene or similar material is fitted on the lower end of the valve cup and extends downwardly to a point just above the bottom of the restricted section of chamber **22**. The secondary inductor **41** is located just to the rear of the chamber and rests on the bottom of the casing which surrounds the entire assembly and holds it firmly in place.

Any suitable means to hold the elements firmly within the warming head casing can be employed. Preferably, however, the casing **20** is molded to a size suitable for insertion of the elements and to hold them firmly in place. If desirable, the elements of the warming head can be placed in a suitable mold and a casing material, preferably plastic, introduced around them to form a completely form-fitting monolithic housing. Another alternative manner is to provide a bracket (not shown) which is attached to the chamber and secondary inductor to hold them together and which is then secured to the walls of the casing by means of screws.

Fitting **27** is associated with an opening in the bottom of the casing so that container **13** can be threadably attached thereto. The chamber and tube associated therewith are generally constructed of a good heat conductive metal such as aluminum, copper, stainless steel or similar materials. However, aluminum or stainless steel is preferred. The chamber should be large enough to provide a sufficient amount of warm shaving lather for at least one shaving operation. Furthermore, the chamber and tube are made at least strong enough to withstand pressures which the container will withstand. Sealing gaskets in addition to those specifically mentioned can be employed where necessary to insure a leakproof system.

The electrical circuit of the device shown schematically in FIG. **5** comprises a primary circuit located in the support member **11** and secondary circuit located in the warming head **12**. It includes a primary inductor **42** connected in series with a thermostatic time delay switch **43**, comprising a resistance element **44** and contacts **45** actuated and latched by button **17** and released by deformation of a bimetal strip, not shown. In addition a magnetic switch, not shown, can be inserted in the circuit as a protective device to prevent operation of the primary circuit without the warming head in place. These elements are all connected to the electric lead cord **18** equipped with plug **19** for attachment to an electrical outlet, as mentioned hereinabove. Indicating light **16** is also connected in parallel with the primary inductor circuit. The secondary circuit includes a secondary inductor **41** which, as with primary inductor **42**, forms one half of a transformer across which a current is induced when the warming head is in position on the support member and the inductors are in a relatively close spatial relationship. The secondary inductor **41**, as mentioned hereinabove, is connected in series to a resistance heating element **32** and thermostat **34**. The inductors **41** and **42** are completely enclosed in the casing **20** of the warming head and the support member, respectively, and do not make any direct physical contact with each other. Such an arrangement provides a high degree of protection against electric shock or other mishap when he warming head is placed on or removed from the support, or in operation.

In FIGS. **3** and **4**, there is illustrated a modification of the warming head having an elongated stainless steel chamber **46**, shaped like one half of a cylinder, which communicates with container **13** through inlet tube **47** by way of stainless steel fitting **48** which contains an enlarged threaded opening **49** that mates with a suitable threaded outlet portion on the pressurized dispensing container **13**. In addition to stainless steel, fitting **48** can be constructed of any suitable material, such as molded nylon or other plastics. An outlet tube **50** is located within chamber **46** and communicates with stainless steel valve housing **51** located near the top of the chamber. Between fitting **48** and outlet valve housing **51** is a secondary inductor **52**. The secondary inductor shown more completely in FIG. **4** has a void **53** which permits passage of actuator rod **54** that extends through bores **55** and **56** contained within fitting **48** and outlet valve hous-

ing **51**, respectively, and passes into valve housing of container **13** to open that valve when the actuator rod is despressed. Passing through the upper part of the chamber is dispensing outlet **57** which communicates with the outlet valve housing **51**. A sealing gasket **58** and neoprene shaft seal **59** are disposed in fitting **48**, as shown. A stainless steel insert **60** is positioned over the shaft seal. The bore **56** of the outlet valve housing is of small diameter at the upper end and increases in diameter at the lower end just below the junction of outlet **57** with the housing, thereby forming a shelf or seat **61** against which neoprene seal **62** is urged by valve **63** which is splined to actuator rod **54**. A neoprene shft seal **64** is located in the upper part of the outlet valve housing and is held in place by spring **65**. An additional spring **66** forcibly urges valve **63** against seal **62** holding the valve in closed position. Spring **66** is held in position by insert **67** and shaft seal **68** which are locked in the base by stainless steel insert **69**, which is press-fitted and soldered in place. Both fitting and valve housing **51** are attached to the wall of the chamber by soldering.

The chamber wall has openings therethrough for the reception of metal sleeves or tubes **70** and **71** most clearly shown in FIG. **4**. The sleeves are stainless steel and are brazed or soldered to the chamber wall at each end to insure a leakproof fit. They extend completely across and form two tunnels through the chamber. A thermostat **72** is inserted in one tube and an insulated nichrome resistance heating element **73** is inserted through the other. Such an arrangement prevents the thermostat and heater from coming into direct contact with material in the chamber. On the other hand, if desirable, the elements can be insorted directly into the chamber through openings and be in direct contact with the shaving cream to be heated. The thermostat and resistor are connected in series with the secondary inductor winding **74** as illustrated in FIG. **4**. The primary inductor **75** is located in support member **11** and has a winding **76**. When the warming head is in place the inductors are in relatively close spatial association, forming a transformer.

Referring now more specifically to FIGS. **6** and **7** the modification of the device therein illustrated is somewhat different in shape and is adapted to be attached to a pressurized container of shaving cream in a different manner. The support member **77** is generally unchanged except that it is shaped as shown at **78** in order to be more closely fitted to the cylindrical warming head **79**. A primary inductor **80** having a winding **81** is located in the support member. The warming head has a plastic casing **82** which is shaped to conform to the size of a pressurized dispensing container **83**. The container has an internally threaded ridge **84** around the top thereof which mates with threads on the downwardly extending portion of the warming head base **85**. As shown in FIG. **7**, the base of the warming head has a passageway **86** extending therethrough and is adapted to be press-fitted to the outlet valve of the pressurized dispensing container. Associated with the base, in the passageway thereof, is a simple ball type check valve **87** which permits the isolation of shaving cream within the warming head when pressures in the head and container are essentially equal and when the head pressure is greater than that in the container. A spring **89** holds the valve in closed position. A sealing gasket (not shown) is disposed in the passageway below the valve seat to insure leakproof sealing between the container and the warming head. Instead of a chamber, a spiral tube **90** of aluminum, copper or other metallic material receives shaving cream which has been separated or withdrawn from the container. The tube is connected at one end to the passageway **86** in the vicinity of the check valve **87** and at the opposite end with an outlet spout **91**. A spring biased outlet valve **92** having a passageway therethrough is inserted in the outlet spout and is normally held in closed position by the spring **93**. In order that the material contained within the tube can be heated, an insulated nichrome resistance heating element **94** is wrapped around the tube **90** thoughout its entire length. The element is connected to the winding **95** of a secondary inductor **96** which is disposed opposite the tube. Connected in series with the resistance element and the secondary inductor is a thermostat **97** which is mounted on the casing of the warming head in any convenient manner and directly contacts tube **90**.

In FIG. **8** there is illustrated an embodiment of the invention in which the only elements contained within the warming head are a conventional resistance heater, thermostat, switch actuated by button **17**, outlet valve and spout. The transformer is located outside of the device as shown at **98**. The casing **99** is in the shape of a longitudinal cylinder equipped with threads **100**. Accordingly, the entire container **101** of pressurized shaving cream can be permanently inserted into the cylinder and held in place by means of the threaded closure member **102**. Closure **102** need not be threaded and can be press-fitted or latched to the cylinder. Such a device is readily adaptable to being moved about, if desirable, or to being equipped with a support means **103** for attachment to a wall or the like.

In FIG. **9** there is illustrated an even more simplified modification of the present invention. It comprises a pressurized container **104** of shaving cream equipped with a coil of copper or aluminum tubing **105**. The tubing is soldered or brazed to a conventional aerosol valve outlet **106** made of steel, brass or aluminum and is equipped with a suitable outlet valve **107** at the opposite end. When the container valve is opened, liquid shaving cream flows into and fills the tube. It is prevented from escaping by the valve **107** which is normally closed. The container valve is opened merely by unseating the valve mechanism. This is accomplished by moving the tube vertically downward. Allowing the tube to return to normal position will then reseat the container valve, thereby isolating in the tube, shaving cream which has flowed into it. The isolated portion of shaving cream is then heated by any convenient means such as an open flame or by flowing hot water over the tube until a desired temperature is attained. Thereupon, the outlet valve **107** is opened and warm lather is forced from the copper tube.

It is apparent that the device of this invention can be constructed to incorporate widely varying particular designs. However, regardless of the articular structure employed, the device permits the withdrawal, separation or isolation of a portion of fluent material under pressure from a pressurized source before temperature modification. In essence, therefore, as pointed out above, the present invention includes a process which comprises withdrawal, separation or isolation of a portion of fluent material under pressure from a pressurized source, modifying the temperature of the separated material while it is under pressure, preferably while maintaining it in a substantially unexpanded state, and subsequently dispensing the separated material in an expanded state after temperature modification. The

process can be carried out within widely varying ranges of pressure and temperature which depend upon a number of factors. In general, the pressures in the system must be at least enough to propel the dispensable fluent material through the apparatus during each step of the process. On the other hand, the upper limit of pressure can be as much as necessary to achieve good dispensing speed so long as it is convenient from a viewpoint of safety, economy in the design of the device and use. However, it is preferred that the pressure be enough to maintain the separated dispensable fluid material in an unexpanded state, that is, in substantially the same state as at the pressurized source. In the field of dispensable aerosol compositions to which the instant device and process is particularly applicable, pressures in a range of about 20 to 200 pounds per square inch gauge are suitable for carrying out the process. However, pressures in a range of about 30 to 130 pounds per square inch gauge are generally preferred. In its application to the dispensing of heated shaving lather, the process is generally carried out at a pressure in a range of about 30 to 130 pounds per square inch gauge in both the container and chamber, and at temperatures of from about 40° C. to 60° C. in the heating zone, that is, the chamber.

In operation, the preferred form of the device shown in FIGS. **1** and **2** functions in accordance with the following explanation. Initially, a pressurized dispensing container **13** filled with liquid shaving cream and a normally gaseous propellant is fitted to the warming head **12**. The container is then placed on the support member **11** and the device is connected to a source of electricity. In the embodiment shown in FIG. **2** of the drawings, the warming head, when threaded to the pressurized container lowers pin **29** into the outlet valve opening of the container permanently unseating the valve and permitting liquid shaving preparation to flow into the tube **24**. When the pressure of the liquid flowing into the tube has built up sufficiently, check valve **26** is forced open and liquid shaving cream flows into chamber **22**. When the pressures in the chamber and the container are substantially equal, the check valve closes, thereby separating the material in the chamber. Accordingly, the device is ready for the heating step when the warming head is attached. On actuation of button **17**, electricity from the source then passes through the thermostatic time delay switch **48**, lighting the indicator light **16**, and to the primary inductor **42** which induces a current in the secondary inductor **41** located in the warming head **12**. The resistance heating element **32** and safety thermostat **34**, connected in series with the secondary inductor, are energized and the heating element becomes hot and heats the chamber wall which transmits heat energy to liquid shaving preparation in the chamber **22**, but particularly in the restricted section **23** of the chamber. If the temperature of the shaving cream should exceed a present maximum, the thermostat **34** will open, thus causing cessation of heating in the chamber. When such a situation exists, a sharp rise in the primary inductor current, caused by the open secondary circuit, will cause the thermal time delay switch **43** to open thereby inactivating the entire device. When the temperature of the thermostatic element in the time delay switch has reached the desired level, the circuit is opened, thereby preventing overheating and the light **16** goes off, indicating the device is not in a heating cycle. It will be apparent that the thermal time delay switch and the thermostat are preset so that the shaving cream in the chamber will be heated to the desired temperature.

In order to dispense the liquid shaving cream which has been so heated, the dispensing valve **37** located on top of the chamber is then activated by depressing valve actuator **21** and opening the chamber to the atmosphere to permit heated pressurized shaving cream to be forced up through the dip tube **40** and out through the outlet spout for use as expanded lather. As the pressure in the chamber decreases, due to the exit of the heated shaving cream which expands to form a rich foam as it leaves the dispensing spout, the check valve automatically is forced open by the higher pressure in the pressurized container forcing additional liquid shaving cream into the large upper part of the chamber, thereby preparing the device for a succeeding warming and dispensing step.

It will be apparent that the chamber can vary in size and it is therefore possible to dispense a predetermined amount of heated shaving cream on other fluent material with the device of this invention. However, the size of the chamber should not be so great that it is impossible to retain the fluent material in a substantially unexpanded state therein. It is to be understood, however, that the language employed herein and the appended claims referring to the separated portion of fluent material as being in a substantially unexpanded state is meant to include the presence of some expanded material or foam in the chamber. For example, the initial charge of liquid shaving cream forced into the chamber is flowing from an area of high pressure to an area of lower pressure. Accordingly, the initial amounts flowing into the chamber will foam until the pressure in the chamber has reached certain limits. Such foaming will usually be kept to a minimum. Expansion of the product in the chamber can be controlled by a number of factors, such as the size of the chamber, the size of the container, the pressure differential between container and chamber necessary to open or close the check valve, the rate of flow or discharge and the pressure in the chamber itself. Although these factors will differ for any particular apparatus, the device should be constructed so that foaming in the chamber is held to a minimum in order to obtain good heat transfer and dispensing of a sufficient volume of a rich, warm lather of suitable consistency. The restricted lower part of the chamber into which the dip tube extends is advantageous in cases where foaming does tend to take place in the chamber. For example, when liquid shaving preparation is flowed into the chamber, the liquid will go to the bottom of the chamber and any portion which has expanded to foam will float on the surface of the liquid. Accordingly, only liquid will be dispensed from the bottom of the chamber through the dip tube at reduced pressure through the outlet valve in an expanded state.

The chamber into which the fluent material such as liquid shaving cream is withdrawn, separated or isolated under pressure can, at the same time, function to transmit heat from any source to the material contained therein in accordance with the embodiment shown in FIG. **9** of the drawings. On the other hand, heating means can include the circuiting shown in the preferred form of the invention or any other suitable heating arrangement and the tube and check valve arrangement of the most preferred form of the invention function as part of the means for withdrawing, separating or isolating the fluent material under pressure prior to heating and dispensing.

The new device of this invention can be employed to dispense a wide variety of fluid materials at modified temperatures. If it is desired to cool the dispensable material, the device can be equipped with a means to lower the temperature rather than to raise it or cold water or other cooling means can be applied to embodiments of the invention like the simplified device shown in FIG. 9.

The invention has been described with reference to certain non-limiting illustrations thereof. It is clear that other embodiments thereof may be made and equivalents may be substituted therein without being outside the scope of the invention or the appended claims.

What is claimed is:

1. A process which comprises

a. withdrawing into a chamber a portion of expandable fluent material from a container containing a body of such material under pressure, while maintaining the withdrawn portion in said chamber under pressure and in substantially unexpanded state;

b. modifying the temperature of said withdrawn portion in said chamber while maintaining it under pressure and in substantially unexpanded state; and

c. discharging said material from said chamber in an expanded state.

2. A process as defined in claim 1 wherein said expandable fluent material is a liquid.

3. A process as defined in claim 2 wherein said liquid material is an aqueous soap solution.

4. A process as defined in claim 2 wherein said liquid material is a shaving cream.

5. A process as defined in claim 1 wherein said body of material in said container is under pressure of a normally gaseous propellant.

6. A process as defined in claim 5 wherein step (b) comprises heating said withdrawn portion.

7. A process as defined in claim 6 wherein said expandable fluent material is a liquid.

8. A process as defined in claim 7 wherein said liquid material is an aqueous soap solution.

9. A process as defined in claim 7 wherein said liquid material is a shaving cream.

10. A process as defined in claim 5 wherein step (b) comprises electrically heating said withdrawn portion.

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